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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/866,732	05/30/2001	Yukihiko Shirakawa	209211US0	7133

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EXAMINER	
HARPER, HOLLY R	

ART UNIT	PAPER NUMBER
2879	

DATE MAILED: 10/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/866,732	SHIRAKAWA, YUKIHIKO	
	Examiner	Art Unit	
	Holly R. Harper	2879	

-- Th MAILING DATE of this communication appears on the cover sheet with the correspond nce address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-2,4-10,13-20* is/are rejected.

7)☒ Claim(s) *3,11 and 12* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 May 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Examiner's Note

The Affidavit needs to be signed.

Response to Amendment

The Amendment, filed on 6/30/2003, has been entered and acknowledged by the Examiner.

Claims 6-20 have been entered.

Election/Restrictions

The restriction requirement is withdrawn.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 9 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Claim 9 recites the limitation "said stripes" in Lines 1-2. There is insufficient antecedent basis for this limitation in the claim.

Claim Objections

4. Claim 14 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claim 4 is rejected under 35 U.S.C. 102(b) as being anticipated by Wu et al. (USPN 5,432,015).

In regard to claim 4, the Wu reference discloses a thin film EL device having an electrically insulating substrate (Figure 1, Element 12), a patterned electrode layer (Figure 1, Element 14 and Column 2, Lines 12-15), a dielectric layer (Figure 1, Element 20), a light-emitting layer (Figure 1, Element 22), and a transparent electrode (Figure 1, Element 24). The dielectric layer is formed by repeated firing and coating plural times (Column 8, Line 55 – Column 9, Line 4).

Double Patenting

7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or

improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

8. Claims 1-2, 4-10, 13-20 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 2 and 6 of U.S. Patent No. 6,577,059 in view of Fujita et al. (USPN 4,547,703).

In regard to claim 1, the Shirakawa reference discloses a thin film EL device with an insulating substrate, a patterned electrode layer, a dielectric layer, a light-emitting layer, and a transparent electrode. The dielectric layer is formed by repeating a coating and firing process plural times (Claim 1). The dielectric layer is 4 to 16 microns (Claim 2). The Shirakawa reference does not disclose the thickness of the electrode layer or relate its thickness to the dielectric layer. The Fujita reference discloses an EL device with electrodes that are 40-70 mm thick and dielectric layers that total about 4 microns (Column 6, Lines 37-63). The dielectric layer thickness is about four times as thick as the electrode layer. It is desirable for the electrodes to be significantly thinner than the dielectric layer to decrease the chances of dielectric breakdown. Thus, it would have been obvious at the time the invention was made to a person having ordinary skills in the art to incorporate an electrode layer that is at least 4 times smaller

than the thickness of the dielectric layer, as taught by Fujita, to decrease the chances of dielectric breakdown.

In regard to claim 2, the Shirakawa reference discloses that the dielectric layer is formed by repeating the coating and firing process at least 3 times (Claim 6).

In regard to claims 6 and 7, the Shirakawa reference does not specifically state the material used to make the insulating substrate, but it is well known in the art to use quartz glass, alumina, and silicon nitride, and glass. It is an inherent property of these materials to have a heat-resistant strength without contaminating the electrode and dielectric layer.

In regard to claim 8, it is well known in EL devices to pattern electrodes into a plurality of stripes.

In regard to claim 10, it is well known to make electrodes from a conductive oxide or a metal material.

In regard to claim 13, it is well known that sol-gel and MOD process are made of steps of repeated firing and coating.

In regard to claims 15 and 17, the Shirakawa reference does not specify the material or the thickness of the light-emitting layer. The Fujita reference teaches it is well known in the art to use ZnS:Mn for the light-emitting layer (Column 1, Lines 22-24). The Fujita reference teaches that the light-emitting layer should have a thickness of 1 micron (Column 6, Lines 41-45), which is in the range of 100-2000 nm. For an element designed for high brightness, it is desired that the ZnS:Mn layer be on the order of .6 microns (Column 1, Lines 60-63). Thus, it would have been obvious at the time the invention was made to a person having ordinary skills

in the art to incorporate a light emitting layer of ZnS:Mn with a thickness of 1 micron, as taught by Fujita, to get the best results for an element designed for high brightness.

In regard to claim 16, it is known in the art that EL devices generally comprise an inorganic material such as ZnS, CaS, or Srs doped with Mn, Eu, Ce, Th, or Sm.

In regard to claim 20, it is well known in the art to create transparent electrodes from ITO, an oxide conductive material.

9. Claims 18 and 19 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 2 and 6 of U.S. Patent No. 6,577,059 in view of Fujita et al. (USPN 4,547,703) in further view of Sun (USPN 6,242,858).

In regard to claims 18 and 19, the limitations of claim 1 are met in the rejection by Shirakawa in view of Fujita above. The references do not specify the use of an insulator layer disposed on the light-emitting layer. The Sun reference teaches the use of an insulator layer on the light-emitting layer that is between 260 and 300 nm thick (Column 18-35). The insulator layer acts as a protective layer and helps to prevent short circuits. Thus, it would have been obvious at the time the invention was made to a person having ordinary skills in the art to incorporate an insulator layer between the thickness of 260 and 300 nm, as taught by Sun, to act as a protective layer.

10. Claims 4 and 5 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 10 of U.S. Patent No. 6,577,059. Although the conflicting claims are not identical, they are not patentably distinct from each other.

In regard to claim 4, the Shirakawa reference discloses a thin film EL device having an electrically insulating substrate, a patterned electrode layer, a dielectric layer, a light-emitting

layer, and a transparent electrode. The dielectric layer is formed by repeated firing and coating plural times (Claim 7).

In regard to claim 5, the Shirakawa reference discloses that the coating and firing is repeated at least three times (Claim 10).

Allowable Subject Matter

11. Claims 3, 11-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 3, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 3, and specifically comprising the limitation of a each sub-layer of the dielectric layer being at least ½ of the thickness of the electrode layer.

Regarding claim 11, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 11, and specifically comprising the limitation of a specific dielectric constant of the dielectric layer that is at least 10 times as large as the thickness of the dielectric layer.

Regarding claim 12, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 12, and specifically comprising the limitation of a dielectric layer that comprises a material from the group perovskite structures, composite perovskite-relaxor ferroelectric materials, bismuth layer-structured compounds, and tungsten bronze ferroelectric materials.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Tushima et al. (USPN 5,863,679) disclsoes a dielectric layer formed by coating and firing.

Wu et al. (USPN 5,432,015) discloses a dielectric layer formed by coating and firing and that is 6-10 microns thick.

Shirakawa et al. (US Application 9,988,141) discloses similar claims to the applicant's.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Holly Harper whose telephone number is (703) 305-7908. The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel, can be reached on (703) 305-4794. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7382.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Holly Harper
Patent Examiner
Art Unit 2879

ASHOK PATEL
PRIMARY EXAMINER